The structural evolution of organic farms in the USA: the international market effect

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Abstract

Rapid growth of the organic agricultural sector in the U.S. and implementation of the U.S. Department of Agriculture's national organic standards in 2002 have lead to concerns that organic production could become increasingly concentrated on larger U.S. and international farms, disrupting the market access of small domestic organic producers. However, data on the U.S. organic agriculture show that the smallest-scale farms continue to hold a small but stable piece of the organic sector and that U.S. organic farm size has grown slowly. The amount of land under organic production worldwide is growing rapidly, particularly in developing countries producing commodities for export, many of which are not widely grown in the U.S. Small-scale producers using direct markets have likely been least impacted from increased organic imports, while producers of organic oilseeds and cotton have likely been most impacted. Federal and State government agencies and the private sector have launched initiatives to sustain small-farm participation in the U.S. organic sector. Programs to better serve organic producers in the U.S. and to differentiate organic and non-organic imports and exports are being developed at the federal level.

Keywords: organic agriculture, organic certification, small-scale farmers, international trade

1. Introduction

Supply- and demand-side forces have made organic farming one of the fastest growing U.S. agricultural sectors for well over a decade. Annual growth in retail sales has equaled around 20 percent or more since 1990 and U.S. sales of organic foods were estimated at almost $14 billion in 2005, with growth forecasted to $24.4 billion by 2010, according to industry estimates (Nutrition Business Journal, 2006). Retailers have responded to rising consumer demand for variety, quality, and convenience by introducing more product varieties while conventional supermarkets and mass market merchandisers have added organic products to their shelves (Oberholtzer *et al.*, 2005). Because price premiums for organics have held steady during this time and in order to meet supply-side demand, more operations and land have become certified organic in the U.S. and small and medium-sized organic companies have grown (USDA–ERS, 2006; Sligh and Christman, 2003). The U.S. Department of Agriculture's (USDA) national organic standards, which were implemented in 2002, were designed to stimulate growth of the organic industry by building consumer confidence in organic products and facilitating commerce in agricultural products that are organically produced.

The marketing pathways and farm profile of organic agriculture have changed as the sector has grown. Until the early 1990s, the largest outlet for organic products in the U.S. was independent natural foods stores. By 2005, independent natural foods stores represented less than 25 percent of organic food sales, and natural foods chains, conventional supermarkets, grocery stores, mass merchandisers, and club stores together accounted for the bulk of sales (OTA, 2006). The use of direct markets has also declined, from approximately 22 percent of total organic sales in the early 1990s to 7 percent in 2005 (USDA-AMS, 2000; OTA, 2006). The organic farm sector historically has had smaller operations and disproportionately more fruit and vegetable production than in

conventional agriculture. With the industry shift toward larger, more concentrated marketing and distribution pathways during the last decade, the number and size of organic operations in the U.S is increasing and is expected to continue doing so into the future. Between 1995 and 2005, the number of certified organic operations has more than doubled and the amount of certified organic land has quadrupled to over 1.6 million hectares, with approximately 0.9 million hectares used for pasture and 0.7 million hectares used for crops (USDA–ERS, 2006).

Small producers have expressed concern that marketplace changes and regulatory measures developed to facilitate domestic and international organic trade, including the USDA National Organic Program, may negatively influence their market access. The national organic standards also refer to their potential impact on small operations, and contain several provisions to mitigate their impact on small producers (USDA-ERS, 2000). Small-scale organic producers are concerned that industry growth will increase competition from larger domestic operations and from international farming operations (Hanson *et al.*, 2004). Small-scale farmers have noted that the fees and paperwork requirements of organic certification inhibit their broader participation in the organic market. And finally, international trade may also be a threat to small organic farms by affecting their market power through increased competition.

Because there are public benefits to sustaining a diverse organic farm sector, a growing number of public and private groups have begun efforts to facilitate the participation of small farms in the U.S. organic market. For example, U.S. certifiers are developing certification programs tailored to small-scale operations and U.S. businesses are expanding opportunities for local, direct-to-consumer marketing. The objectives of this paper are to examine the structural changes in the U.S. organic sector over the last couple of decades, identify the potential impact of international trade on this sector, and assess the potential for small-scale farmers to remain an important component of this sector.

2. Methodology

To understand the impacts of international trade on the U.S. organic agricultural sector, specifically the impact on U.S. small farms, we first explore recent structural changes in the U.S. organic sector. Organic certification data from the USDA provide the most comprehensive description of the U.S. organic sector. USDA's Economic Research Service (ERS) has published estimates of certified organic farmland and livestock, by commodity and state, since 1997, along with some data on small organic farms. National-level estimates are available since 1992. This data were collected from State and private certification groups and were analysed to determine changes in the average size of operations as well as to determine whether small organic farms, under two hectares, are in decline. These national data sets were also used to analyse regional differences in the size of organic operations. The National Organic Program does not require organic growers and processors selling less than $5,000 per year in organic agricultural products to be certified and therefore those producers are excluded from these data.

Comprehensive data about the organic agricultural sector in California is also available, and because California makes up such a large percentage of the overall certified organic production in the U.S., trends and numbers there may reflect the realities of organic operations throughout the U.S. Data about the organic agricultural sector in California was obtained from the California Department of Food and Agriculture's (CDFA) registration data and the California Certified Organic Farmers (CCOF), a non-profit. California certification data is provided to the CDFA by growers and was used to identify changes in the average size of operations enrolled in organic certification programs in that State from 1992 and 2003, as well as other structural changes

in the farm sector. Because the number of organic operations in California is increasing, California registration data describes the size of new operations entering the market, illustrating disproportionate certification by large farms. Data from the CCOF, the largest organic certifier in California, provide information about California's organic sector beginning in 1985.

This paper also explores the current information available on the role of international trade on the U.S. organic agricultural sector and some of the existing, planned, and potential programs and mechanisms developed to ensure the continued participation of small organic farms in the U.S. State agencies, nonprofit organisations, and U.S. food companies are all initiating programs to support small farm organic production as the organic sector grows and changes. Additionally, government agencies are developing projects that will fill information gaps about the U.S. organic sector and the role of international trade.

3. Organic farm size trends

3.1 National trends, based on USDA data

National datasets from 1992 to 2005 of total organic farmland suggest that the amount of certified organic farmland has steadily increased since the early 1990s, with certified organic cropland increasing more rapidly than pastureland during most of this period. On the other hand, the average size of certified organic operations has trended upward fairly slowly, despite rapidly growing demand during the 1990s and the implementation of organic regulations in 2002 which facilitated further growth in the market. For the decade spanning 1992-2002, the number of certified organic operations in the U.S. doubled from 3,857 to 7,323, but the average size of certified organic operations changed by less than one percent from an average size of 105.6 hectares to 106.4 hectares. Some growth in organic cropland is seen when organic pasture is excluded from these averages: from 1992-1995, operations ranged from 45.3 hectares to 56.7 hectares and then grew to an average of 74.9 hectares in 2000. By 2005, the average size of certified organic cropland operations was 82.1 hectares.

3.2 Regional Trends, based on USDA data

National-level data can be misleading, since regions specialising in field crops have significantly larger operations than regions specialising in specialty and other high-value crops. To get a better understanding of average farm size throughout the U.S., we have broken the data into ten Regions, based on USDA production categories (Table 1). Regional farm size averages in the Continental U.S. ranged from 23.9 hectares in Appalachia to 536.6 hectares in the Mountain Region in 2000 and from 28.7 hectares in the Southeast to 637 hectares in the Southern Plains in 2005.

Neither the total number of operations in the Region, nor the total amount of certified organic land in the Region was indicative of the average size of each operation (Table 2); in 2005, the Pacific Region contained the third highest amount of certified organic land in the U.S., the highest number of certified organic operations, and had the fourth smallest average size of operation. On the other hand, the Southern Plains ranked fifth in total certified organic land, sixth in the number of organic operations, and yet had the second highest average sized operation in 2005. Three Regions, the Delta, Corn Belt, and Mountain regions, experienced declines in the average size of certified organic operations between 2000 and 2005, ranging from four to 34 percent, while rates of growth in the other Regions, excluding Alaska and Hawaii, ranged from 17 percent in the Pacific to an almost tripling in size in the Southern Plains. Regional averages were not included for the non-Continental U.S. region (Alaska and Hawaii) because of the disparate size

Table 1. USDA production regions.

Appalachia	Kentucky , North Carolina, Tennessee Virginia, West Virginia
Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
Pacific	California, Oregon, Washington
Corn Belt	Illinois, Indiana, Iowa, Missouri, Ohio
Northeast	Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
Southeast	Alabama, Florida, Georgia, South Carolina
Delta	Arkansas, Louisiana, Mississippi
Northern Plains	Kansas, Nebraska, North Dakota, South Dakota
Southern Plains	Oklahoma, Texas
Lake States	Michigan, Minnesota, Wisconsin
Other: non-continental U.S.	Alaska, Hawaii

Table 2. Average operation size by USA region in 2000 and 2005.

Region	2000			2005			2000-2005
	Number of farms	Organic land (hectare)	Average farm size (hectare)	Number of farms	Organic land (hectare)	Average farm size (hectare)	Percent change in farm size
Southern Plains	432	42,060	234	449	138,853	637	173
Appalachian	49	7,804	24	39	5,966	38	59
Northern Plains	96	114,425	265	144	174,791	389	47
Lake States	1,322	78,342	82	1,747	119,755	102	24
Northeast	695	45,205	34	656	71,440	41	20
Southeast	327	2,603	24	157	3,968	29	19
Pacific	1,602	90,040	56	2,760	181,266	66	17
Corn Belt	957	59,078	72	1,177	69,690	69	-4
Mountain	108	373,028	537	138	262,846	401	-25
Delta	824	8,202	168	1,008	4,282	110	-34
Continental U.S.	6496	718,400	111	8349	1,047,739	125	46

and composition of their organic farm sectors. In 2005, Alaska had nearly 0.6 million hectares of organic pasture (accounting for two-thirds of U.S. total organic pasture), while Hawaii had 2,000 hectares of organic cropland, mostly for fruit and vegetable production.

3.3 Mixed vegetable summary, based on USDA data

The organic market niche has its origins in premiums that small-scale farmers derived from marketing produce directly to consumers and small health food stores, a niche particularly well-suited to maintaining the profitability of small farms. Small mixed vegetable operations are prevalent in the organic sector, and USDA has tracked those that are smaller than two hectares (five

acres) in order to capture trends affecting these small farms. USDA has asked organic certifiers for information about these small operations since 1997, but differences in reporting by certifiers has affected the precision of the data and ultimately, they can only be used to examine trends.

In 1997, mixed vegetables grown on very small plots under two hectares, as reported by certifiers, comprised 5.6 percent of all land dedicated to organic vegetable production in the U.S. The number of hectares operated as small mixed-vegetable plots has continued to expand overall between 1997 and 2005, although as a percentage of total vegetable land they have declined slightly (Figure 1). These very small farms have essentially maintained a small, but relatively stable, share of the overall certified organic vegetable market. Among regions, small mixed vegetable plots were most likely to be seen in 2005 in the Pacific, Northeast, Mountain, Lake States, Hawaii, Corn Belt, and Appalachian regions.

3.4 Certifier data

California Certified Organic Farmers (CCOF) is one of the few published sources of information about organic farm size prior to the 1990s. CCOF was established in 1973 and was one of the first organisations to offer third-party organic certification services to farmers in the U.S. CCOF certifies more farmers than any other certifier in California, and is the top certifier in the U.S., as well. In 2005, CCOF certified over 60 percent of California's certified organic farmland, after certifying nearly 77 percent in 1995, and even higher percentages in the 1980s (CCOF, 2006; Greene, 1992). Because of California's dominance in U.S. organic production and CCOF's dominance in certification, CCOF's data may represent trends mirrored throughout the U.S.

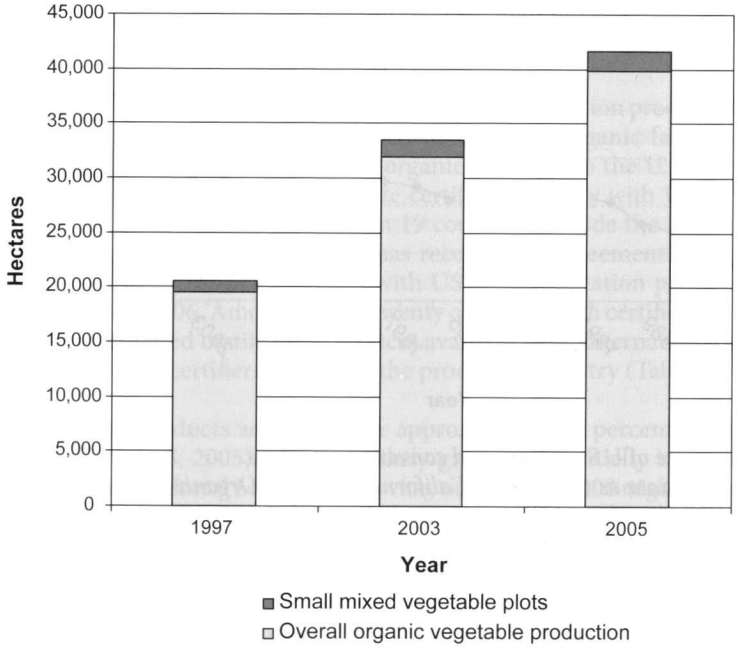

Figure 1. Small vegetable plots parallel growth in overall organic vegetable sector.

The total number of organic hectares and growers certified by CCOF rose steadily between 1985 and 2005. However, the average operation size of farmers enrolled in the CCOF certification program grew rapidly and then reached a plateau of about 61 hectares per grower in the late 1990s (Figure 2). In 1991, only five percent of CCOF's growers had organic operations larger than 405 hectares (1,000 acres) (Greene, 1992).

3.5 Summary of average organic operation size

There is no precise information on the average size of organic operations in the U.S., but analysis of a variety of data sources indicates that it is about 60 percent of the size of average U.S. farms. Trends also indicate that the average size of organic operations is generally increasing (Figure 2), but that its growth is not increasing rapidly. University of California studies suggest that over half of the registered organic operations in California were smaller than two hectares throughout the late 1990s and there is no evidence to suggest that this percentage has changed markedly (Klonsky and Richter, 2005). The certified organic livestock sector has begun to grow rapidly and it is possible that the average size of certified organic operations might also begin to grow rapidly as pasture is increasingly certified as organic.

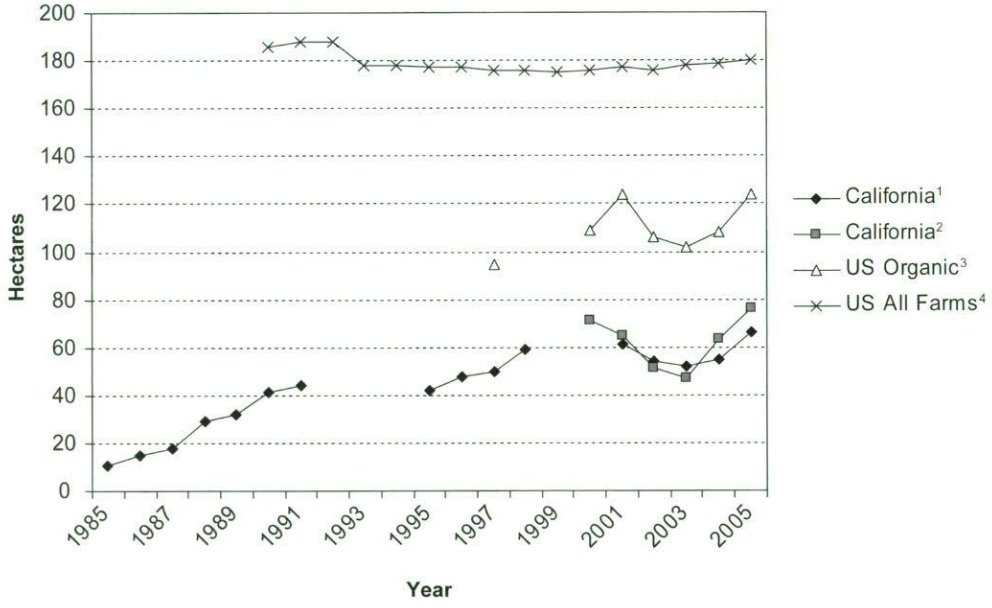

Figure 2. Average size of U.S. organic and conventional farms.
[1]California organic data as reported by California Certified Organic Farmers (CCOF).
[2]California organic data from USDA, Economic Research Service (ERS).
[3]USDA, Economic Research Service (ERS); includes all States except Alaska.
[4]USDA, National Agricultural Statistical Service (NASS) and Census of Agriculture.

4. International organic markets and production

The global market for organic products – mostly in the U.S., Europe, Canada and Japan – has more than tripled during the last decade, with retail sales reaching $30-32 billion in 2005 (Kortbech-Olesen, 2006). According to Willer and Yussefi (2006), the North American organic market is also reporting the highest growth worldwide, indicating that the region will account for much of the global revenues in the foreseeable future. The U.S. had $14 billion in organic food sales in 2005, nearly 2.5 percent of U.S. food sales and approximately 45 percent of global organic sales (OTA, 2006).

Organic production has expanded rapidly in recent years in developing countries, as well as in developed countries (Table 3). An estimated 31 million hectares of farmland are managed under organic production worldwide (Willer and Yussefi, 2006). Another 19.7 million hectares worldwide includes areas of certified forest and wild harvested plants. The U.S. has the fourth largest area under organic management in the world (Table 3), behind Australia, China and Argentina. USDA reported that in 2005 over 1.6 million hectares of U.S. farmland (0.5 percent of U.S. agricultural land) was under organic production (USDA–ERS, 2006).

4.1 U.S. organic trade

Data on organic imports and exports is incomplete because U.S. customs does not differentiate between organic and non-organic trade. USDA estimates that the value of U.S. exports was between $125 and $250 million in 2002, while the value of U.S. imports was between $1.0 and $1.5 billion, and organic imports now exceed exports by a ratio of approximately 8 to 1. (USDA–FAS, 2005). U.S. exports have stagnated as domestic demand has risen and competition for international markets has increased. However, the U.S. was likely a net exporter during part of the 1990s, with exports estimated at approximately 200 million by 1994 (Natural Foods Merchandiser, 1995), and at $200-$300 million in the late 1990s (Fuchshofen and Fuchshofen, 2000).

The U.S. National Organic Program (NOP) streamlined the certification process for international as well as domestic trade when it was implemented in 2002. Organic farmers and handlers anywhere in the world are permitted to export organic products to the U.S. if they meet NOP standards and are certified by a public or private certification body with USDA accreditation. Since 2002, USDA has accredited 40 certifiers in 19 countries outside the U.S., mostly in Latin America, Europe, and Canada, and currently has recognition agreements with six countries. In addition, nearly a dozen U.S.-based groups with USDA accreditation provided certification services in 30 countries in 2006. Among the top twenty countries with certified organic farmland, sixteen have USDA-accredited certification services available from international certifiers based in the U.S. and/or domestic certifiers located in the producing country (Table 3).

U.S. imports of organic products accounted for approximately 12 percent of the U.S. organic market in 2002 (USDA–FAS, 2005), and have likely grown substantially in the last four years. According to USDA's Agricultural Marketing Service, out of the 20,000 organic clients of USDA-accredited certifiers operating worldwide in 2006, approximately 9,000 were located outside the U.S. (C. Greene, personal communication 2006). The U.S. organic market has increased 15-20 percent a year since 2002 (OTA, 2006), and imports have increased as U.S. farmers struggle to keep pace with demand in the face of strong market competition. Organic food production is often labour-intensive, and developing countries with lower farm labour costs than those in the U.S. have a competitive advantage in organic production.

Table 3. Organic farmland is growing rapidly in most of the top 20 countries. Source: Willer and Yussefi (2006) and Yussefi and Willer (2002) reports on worldwide organic farmland, see http://www.soel.de/oekolandbau/weltweit.html for current and former editions of The World of Organic Agriculture; USA, USDA-ERS, see www.ers.usda.gov/data/organic.

Country	Certified and transitional organic agricultural land				Change 2002-2006 (%)	Availability USDA-NOP certification Services[2]
	2002 survey		2006 survey			
	(hectares)	Organic/ total (%)	(hectares)	Organic/ total (%)		
Australia	7,645,924	2	12,126,633	3	59	yes
China	40,000	<1	3,466,570	<1	>1,000	yes
Argentina	2,800,000	2	2,800,000	2	-	yes
USA	900,000	<1	1,620,350	<1	80	yes
Italy	1,040,377	6	954,361	6	(8)	yes
Brazil	803,180	<1	887,637	<1	11	yes
Germany	546,023	3	767,891	5	41	yes
Uruguay	1,300	<1	759,000	5	>1,000	yes
Spain	380,838	1	733,182	3	93	yes
UK	527,323	3	690,272	4	31	yes*
Chile	3,301	<1	639,200	4	>1,000	yes
France	371,000	1	534,037	2	44	--
Canada	340,200	<1	488,752	<1	44	yes
Bolivia	13,918	<1	364,100	<1	>1,000	yes
Austria	271,950	9	344,916	13	27	yes
Mexico	85,676	<1	295,046	<1	244	yes
Peru	27,000	<1	260,000	<1	863	yes
Greece	24,800	<1	249,488	3	906	yes
Ukraine	N/A	--	241,980	<1	N/A	--
Czech Republic	165,699	4	160,120	6	(3)	--
All countries[1]	17,156,455		31,000,000	--	81	

[1]Most estimates in the 2002 survey were as of 31.12.2000; most estimates in the 2006 survey were as of 31.12.2004.
[2]USA-National Organic Program (NOP) accredited certification services.
* The U.S. has recognition agreements with six countries, including the UK.

According to FAS, Canada is the main market for U.S. organic exports, while countries in Latin America, including Mexico, Brazil, Argentina, and Uruguay, along with China and other countries in Asia are major sources of organic imports. Among the top twenty organic countries with certified organic farmland, the countries with the fastest growth in organic production are mostly those that produce organic products for export. The amount of land under organic production systems in China, Bolivia, Chile, Uruguay, and the Ukraine for example, increased well over 1,000 percent between 2002 and 2006,, while organic farmland in Europe and North America showed more modest expansion (Table 3). Worldwide, organic farmland increased approximately 81 percent between 2002 and 2006. While many developing countries were starting from a low base

of certified organic farmland in 2002, several, particularly in Latin America, now manage a higher proportion of their farmland under certified organic farming systems than the U.S.

While some U.S. organic imports compete directly against similar U.S. products, many are products that are not widely grown in the U.S., such as coffee and winter produce. The impact of U.S. organic imports varies widely among commodity sectors. Small-scale farmers producing a wide variety of horticultural products – and increasingly livestock products – for sale in direct markets have likely seen the least impact from increased imports. Organic consumers at farmers markets, independent restaurants, small food shops, and other direct markets are explicitly seeking locally-grown organic products. However, some fruit and vegetable growers who marketed to natural foods grocery stores during the 1990s have reported losing some of their markets to imports as well as to larger domestic producers as these stores have expanded (Hanson *et al.*, 2004).

U.S. organic grain and oilseed producers also face market competition. U.S. organic cotton producers began losing market share in the 1990s to countries with lower labour, input, and technology costs (Greene and Kremen, 2003), and U.S. organic soybean production started declining several years ago as low-cost production began to increase in developing countries. However, U.S. cropland for wheat is still expanding, even as organic wheat production grows rapidly in the Ukraine and other parts of Eastern Europe.

5. Small farm organic initiatives

About 94 percent of all farms in the U.S. are considered small, with gross sales under $250,000 (Perry, 1998), and a survey of organic producers in California in the mid-1990s showed a similar proportion (Klonsky *et al.*, 2002). Most federal and state governments generally view organic initiatives as a mechanism to assist small producers. During the 1990s, U.S. policy on organic agriculture focused on facilitating consumer market access to a differentiated product, and national organic standards were developed during this period. More recent state and federal organic initiatives – expanding organic production and marketing research, technical assistance, and data development – are aimed at expanding market opportunities for producers.

Government research and policy initiatives often play a key role in the adoption of new farming technologies and systems. A number of federal agencies have expanded programs since the late 1990s to develop organic crop insurance, expand organic export programs and services, and broaden their intra-mural or inter-mural research on organic farming and marketing systems.

Congress also included several first-time research, conservation, and marketing assistance provisions aimed at assisting small organic farmers in the 2002 Farm Act, including cost-share funds to assist growers with the cost of organic certification, and the USDA recently proposed expanding a number of these provisions.

State support for organic farmers and handlers has also been expanding. For example, the number of States offering organic certification services – mostly at subsidised rates – has risen from 12 states in 1997 to 19 states in 2005. Several states, such as Minnesota and Iowa, began offering small subsidies for conversion to organic farming systems in the late 1990s as a way to capture the environmental benefits of these systems. The funds for these programs have mostly been from federal sources, by designating organic production as a priority for conservation cost share coverage under the federal Environmental Quality Incentives Program (EQIP) program. Additional states are now using or considering EQIP program funds for this objective. Also,

at least one county – Woodbury County in Iowa – is now providing tax rebates for those who convert from conventional to organic farming practices. In 2003, the National Association of State Departments of Agriculture released a policy statement on organic agriculture expressing support for a wide range of activities that would expand public-sector organic research and education and provide technical assistance to organic and transitional farmers.

U.S. food companies are also developing innovative programs to encourage organic marketing opportunities for small farmers. For example, Whole Foods Market, the leading retailer of natural and organic foods in the U.S., announced several initiatives in 2006 to support local agriculture. The company supports weekly farmer markets in locations adjacent to their stores in many areas and developed and dedicated an annual budget of $10 million to offer long-term loans at low interest rates to support smaller scale agricultural entrepreneurs (Whole Foods Market, 2007). It is far too early to know the impact of these loans on small farms in the U.S., but Whole Foods Market has seen positive results when implementing similar loans through their Foundation in developing countries. Whole Foods Markets has encouraged individual and small groups of stores to develop on-going relationships with small, local farms for over 25 years.

6. Conclusions

During the process for implementing mandatory national organic standards for organic agriculture, the U.S. Department of Agriculture was concerned organic production could become more concentrated with larger farms if some small organic operations chose to exit the industry and others became reluctant to enter (USDA-AMS, 2000). Many U.S. organic farmers expressed similar concerns. However, since the USDA rules were implemented, data on U.S. organic agriculture shows that the smallest-scale farms continue to hold a small but stable piece of the organic sector, and organic farm size has grown, but fairly slowly. Average organic farm size is still much lower than overall farm sizes in the U.S. Overall, the U.S. organic farm sector is still steadily expanding, with cropland for fruits, vegetables, and many grains more than doubling between the late 1990s and 2005, despite rapidly increasing competition for global and domestic markets.

Gaps in the data prohibit an exhaustive description of the U.S. organic farm sector, and improved data collection is necessary to better monitor the effect of international trade and growing markets on small organic producers in the U.S. in the long run. However, progress is being made. USDA recently initiated a project to expand its annual economic survey of producers to include statistically-reliable samples of organic producers, and is working with other agencies to encourage the differentiation of organic and non-organic products as they enter and exit the country.

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